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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,659	01/31/2002	Mark Philip D'Evelyn	RD-26623	1467

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GENERAL ELECTRIC COMPANY  
GLOBAL RESEARCH  
PATENT DOCKET RM. BLDG. K1-4A59  
NISKAYUNA, NY 12309

EXAMINER

ANDERSON, MATTHEW A

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 09/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/683,659	<b>Applicant(s)</b> D'EVELYN ET AL. <span style="float: right;">C</span>	
	<b>Examiner</b> Matthew A. Anderson	<b>Art Unit</b> 1765	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-94 is/are pending in the application.  
     4a) Of the above claim(s) 81-94 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 11-20, 24-27, 30-32, 34-41, 44-49, 53-62, 66-69, 72-74 and 76-80 is/are rejected.
- 7) ☐ Claim(s) 8-10, 21-23, 28-29, 33, 42-43, 50-52, 63-65, 70-71, 75 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6, 18, 20, 25-26, 30-32, 34, 37-41, 44-48, 60, 62, 67-68, 72-74, 76 78-80, are rejected under 35 U.S.C. 102(a) as being anticipated by Byrappa et al., Handbook of Hydrothermal Technology, Chapter 3: Apparatus, pp. 82-160, 2001.

Byrappa et al. discloses apparatus used at extreme pressures and temperatures. (see page 82). Page 83 discloses simple autoclaves from the 1970's. Selection of materials includes steel, iron, nickel, cobalt-based, super-alloys, titanium and titanium's alloys. These materials exhibit good corrosion resistance at the use pressure and temperature to the given solvent or hydrothermal fluid. Nickel is inherently cold weldable. Fig. 3.3 shows the general shape of the vessel to be a hollow cylinder with a closure at one end. Liners of the vessel include (see Table 3.5) Ti, iron alloys, Ag, Pt, Cu, Ni, Au. Pt is inherently inert. Fig. 3.19 shows a baffle in such an apparatus. Fig. 3.21

shows threads on the closure cap. On page 106, a silver or copper seal gasket is disclosed. The danger of hydrogen embrittlement is disclosed on page 89. Hydrogen embrittlement is caused by hydrogen forming metal hydrides and thus reducing the strength of the apparatus. Table 1 shows apparatus capable of operating with pressure of 6 bar up to 500 kbar. A plug is shown in Fig. 3.11. with a tube extending there-through. The examiner notes that the intended use of the vessel (i.e. a use where the chamber is substantially free from air) is not germane to the issue of the patentability of the apparatus itself.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of

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35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 7, 19, 24, 27, 35-36, 49, 61, 66, 69, 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Byrappa et al.

It would have been obvious to one of ordinary skill in the art at the time of the present invention to optimize the thickness of the lining (i.e. coating) inside the vessel and the thickness of the wall itself because the coatings were for corrosion protection and Byrappa discloses a coating with some uncertain thickness. The optimization of the thickness of the parts would have been achieved with only routine experimentation.

In respect to claim 35, it would have been obvious to one of ordinary skill in the art at the time of the present invention to form a capsule with no hydrogen permeability because this would increase the safety by reducing the danger of hydrogen embrittlement.

In respect to claim 36, 77 it would have been obvious to one of ordinary skill in the art at the time of the present invention that the vessel be self pressurizing since the relation between P and T are commonly known.

In respect to claim 27, 69, it would have been obvious to one of ordinary skill in the art at the time of the present invention to form the baffle from known materials including nickel because Byrappa et al. discloses known used materials as including nickel and discloses baffles in such apparatus.

6. Claims 11-17, 53-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Byrappa et al. as applied to claims above, and further in view of Purdy US 5,902,396.

Byrappa et al. is described above.

Byrappa et al. does not disclose explicitly a free space between an inner capsule and an outer capsule.

Purdy discloses a method of growing a crystal with an inner vessel (see # 12 in Fig. 1) and an outer vessel (20). A free space is shown in Fig.1 between the vessels. In col. 5 line 10-15 a counter pressure fluid (water) is disclosed as provided in the space between the vessels to counter the possibility of explosion. The inner vessel can be a quartz (i.e. a silicon oxide based glass).

It would have been obvious to one of ordinary skill in the art at the time of the present invention to combine the disclosures of Byrappa et al. and Purdy because Byrappa et al. discloses that safety is extremely important for pressure vessels and Purdy discloses a way of increasing safety.

In respect to claims 11-14, 53-56, it would have been obvious to one of ordinary skill in the art at the time of the present invention to place the inner vessel (i.e. capsule) inside a outer vessel with a counter pressure fluid (i.e. a medium) (e.g. water) which provides an overpressure because such is suggested by Purdy et al.

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In respect to claim 15-16, 57-58, it would have been obvious to one of ordinary skill in the art at the time of the present invention to use a quartz inner vessel because Purdy directly suggests such.

In respect to claim 17, 59 it would have been obvious to one of ordinary skill in the art at the time of the present invention to optimize the thickness of the quartz inner vessel since Purdy suggests such a vessel which has a thickness.

***Allowable Subject Matter***

7. Claims 8-10, 21-23, 28-29, 33, 42-43, 50-52, 63-65, 70-71, 75 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

In respect to claims 8-10, 21-23, 50-52, 63-65 the prior art does not suggest a diffusion barrier disposed between the coating and the vessel. In regard to claims 28-29, 70-71 the coated baffle is not suggested by the prior art. In respect to claim 33, 75 the prior art does not disclose a surrounding outer seal. In respect to claim 42-43, the prior art does not disclose a coating on such a plug for such a vessel.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should

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preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Response to Arguments***

9. Applicant's arguments filed 7/02/2004 have been fully considered but they are not persuasive.

The argument that Byrappa does not anticipate the claims rejected under 35 USC 102 is not convincing. The presence of air in the sealed capsule reads on how the apparatus is used and not on the structure of the apparatus itself.

### ***Conclusion***

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will



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the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew A. Anderson whose telephone number is (571) 272-1459. The examiner can normally be reached on M-Th, 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MAA  
15 September 2004

**NADINE G. NORTON**  
**SUPERVISORY PATENT EXAMINER**

